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STIC Search Report
EIC 2800

USPTO

STIC Database Tracking Number: 101146

TO: Jennifer Dolan
Location: CP4 4B10
Art Unit : 2813
Thursday, August 14, 2003

Case Serial Number: 09/504623

From: Bode Fagbohunka
Location: EIC 2800
CP4-9C18
Phone: 703-605-1726

bode.fagbohunka@uspto.gov

Search Notes

Examiner Dolan,

Please find attached the results of your search for 09/504623. The search was conducted using the standard collection of databases on dialog for EIC 2800. The tagged references appear to be the closest references located during our search.

If you would like a re-focus please let me know or if you have any questions regarding the search results please do not hesitate to contact me.

Bode Fagbohunka

FUNCTIONAL AND SMART MATERIALS

Zhong Lin Wang, Georgia Institute of Technology

J. Webster (ed.), *Wiley Encyclopedia of Electrical and Electronics Engineering Online*
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Article Online Posting Date: December 27, 1999

ARTICLE CONTENTS PREVIOUS NEXT

OTHER MATERIALS

Fullerenes and Related Carbon Materials

Carbon is probably the most versatile element; it can form various structures. Amorphous carbon, partially disordered carbon black, graphite, and diamond are the commonest forms of carbon. The discovery of carbon fullerene C_{60} (80) and particularly carbon nanotubes (81) has raised a lot of technological interest. A carbon nanotube is composed of nearly concentric cylindrical graphitic sheets (82,83). The carbon tubes usually have a diameter of 3 nm to 20 nm, and their length can be more than 10 μm. The aligned carbon tubes exhibit high dielectric anisotropy. The electronic and mechanical properties of the tubes are strongly affected by the size of the tube as well as the number of the graphitic layers. Graphitic-structured carbon spheres (84,85) are candidates for surface coating, catalysis support, and high-strength composites.

Biomaterials

Many living creatures have structures that exhibit far better properties than conventional materials can offer. The growing importance of bioengineering is raising a challenge to materials synthesis and processing. Biomaterials are actually composite materials of organic and inorganic, ceramic/metal and polymer. These materials are the foundation of drug delivery and tissue engineering (86). The materials used in medical applications, as for filling teeth and replacement of bones and joints, are required to stick to bone, mimic color, flex like natural tissues, and keep their form under extremes of heat and cold. Plastic polymer materials have fundamental importance for these purposes.

ARTICLE CONTENTS PREVIOUS NEXT

[EEEE Home] [A to Z] [Subjects] [Search]

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Set     Items   Description
S1        731   AU=(TSUKAGOSHI K? OR TSUKAGOSHI, K? OR ALPHENAAR B? OR ALP-
             HENAAR, B? OR MIZUTA H? OR MIZUTA, H?)
S2    1675618   FERROMAGNET? OR FERRO()MAGNET? OR IRON OR FE OR COBALT OR -
             CO
S3      27871   CHANNEL?(3N)REGION?
S4          4   S1 AND S2 AND S3
? show files
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
         (c) 2003 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2003/Jul W03
         (c) 2003 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20030807,UT=20030731
         (c) 2003 WIPO/Univentio
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200352
         (c) 2003  Thomson Derwent
?
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4/9/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
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06737918 **Image available**
MAGNETO-ELECTRONIC DEVICE AND MAGNETIC HEAD

PUB. NO.: 2000-323767 [JP 2000323767 A]
PUBLISHED: November 24, 2000 (20001124)
INVENTOR(s): **TSUKAGOSHI KAZUHITO**
ALPHENAAR BRUCE W
MIZUTA HIROSHI
APPLICANT(s): HITACHI LTD
APPL. NO.: 2000-062425 [JP 200062425]
FILED: March 07, 2000 (20000307)
PRIORITY: 99303615 [EP 99303615], EP (European Patent Office), May 10, 1999 (19990510)
INTL CLASS: H01L-043/08; G01R-033/02; G11B-005/39; H01F-010/06; H01L-043/10; H01F-010/16

ABSTRACT
PROBLEM TO BE SOLVED: To acquire a magneto-electronic device and a magnetic reproduction head hardly affected by an external noise and improved in S/N ratio.
SOLUTION: A magneto-electronic device comprises a first **ferromagnetic** region 3, a second **ferromagnetic region** 4, and a **channel region** 5 formed between the first **ferromagnetic** region 3. The second **ferromagnetic** region 4 responds to an applied magnetic field. The **channel region** 5 is structured to provide quasi-one dimensional channel so that a charge carrier passing through the first **ferromagnetic** region 3 can maintain its spin polarization when passing to the direction of the second **ferromagnetic** region 4.

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4/9/4 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013799207 **Image available**
WPI Acc No: 2001-283419/200130
XRPX Acc No: N01-202038
Magnetoelectric device for use typically as a magnetic reading head using two ferromagnetic regions **with a** channel **between including a nanotube providing a small detector with relatively high resistance to external noise**
Patent Assignee: HITACHI EURO LTD (HITA); HITACHI LTD (HITA)
Inventor: **ALPHENAAR B W** ; **MIZUTA H** ; **TSUKAGOSHI K**
Number of Countries: 026 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1052520	A1	20001115	EP 99303615	A	19990510	200130	B
JP 2000323767	A	20001124	JP 200062425	A	20000307	200130	

Priority Applications (No Type Date): EP 99303615 A 19990510
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1052520	A1	E	21	G01R-033/09	

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI
JP 2000323767 A 11 H01L-043/08

Abstract (Basic): EP 1052520 A1

NOVELTY - The magnetoelectric device, which is responsive to an applied magnetic field, comprises two **ferromagnetic** regions (3,4) with a channel (5) between. The **ferromagnetic** regions are configured so that charge carriers with a particular spin polarization which can pass through the first region pass through the second region as a function of the relative orientations of the magnetization of the **ferromagnetic** regions.

DETAILED DESCRIPTION - The device exhibits a conductivity as a function of the strength of the applied magnetic field. The **channel region** includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first **ferromagnetic** region to maintain their spin polarization as they pass through the second **ferromagnetic** region.

USE - Detection of magnetic fields particularly for magnetic reading heads.

ADVANTAGE - Small device capable of detecting individual storage areas on magnetic media with relatively high resistance through the device and sensitive to external noise.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic cross section of the magnetoelectric device.

Ferromagnetic regions (3,4)

Channel (5)

Nanotube (6)

pp; 21 DwgNo 1/22

Title Terms: MAGNETOELECTRIC; DEVICE; TYPICAL; MAGNETIC; READ; HEAD; TWO; **FERROMAGNETIC** ; REGION; CHANNEL; DETECT; RELATIVELY; HIGH; RESISTANCE; EXTERNAL; NOISE

Derwent Class: S01; T03; U12; V02

International Patent Class (Main): G01R-033/09; H01L-043/08

International Patent Class (Additional): G01R-033/02; G11B-005/33; G11B-005/39; H01F-010/06; H01F-010/08; H01F-010/16; H01L-043/10

File Segment: EPI

Manual Codes (EPI/S-X): S01-E01B; S01-E01C1; T03-A03C3; T03-A03E; U12-B01B; V02-B03

?

4/TI,PN,PD,AN,AD,AB,K/2 (Item 1 from file: 348)
DIALOG(R)File 348:(c) 2003 European Patent Office. All rts. reserv.

Magnetoelectric device
Magnetoelektrischer Vorrichtung
Dispositif magnetoelectrique
PATENT (CC, No, Kind, Date): EP 1052520 A1 001115 (Basic)
APPLICATION (CC, No, Date): EP 99303615 990510;

ABSTRACT EP 1052520 A1
A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a reading head for data stored in magnetic storage media, comprises first and second **ferromagnetic** regions (3, 4) with a **channel region** (5) between them, the **ferromagnetic** regions being configured so that charge carriers with a particular spin polarisation which can pass through the first region, pass through the second region as a function of the relative orientations of magnetisation of the **ferromagnetic** regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The **channel region** (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first **ferromagnetic** region to maintain their spin polarisation as they pass towards the second **ferromagnetic** region. In an alternative embodiment a deposited carbon layer (14) is used in the **channel region** .

INVENTOR:
Tsukagoshi, Kazuhito ...

...GB)
Alphenaar, Bruce W ...

...GB)
Mizuta, Hiroshi ...

...ABSTRACT as a reading head for data stored in magnetic storage media, comprises first and second **ferromagnetic** regions (3, 4) with a **channel region** (5) between them, the **ferromagnetic** regions being configured so that charge carriers with a particular spin polarisation which can pass...

...through the second region as a function of the relative orientations of magnetisation of the **ferromagnetic** regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The **channel region** (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first **ferromagnetic** region to maintain their spin polarisation as they pass towards the second **ferromagnetic** region. In an alternative embodiment a deposited carbon layer (14) is used in the **channel region** .

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Query/Command : his

File : PLUSPAT

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SS  Results
 1          0  ..FAM JP200323767/PN
 2          2  (1) ..FAM 2000323767/PN
 3         22  (1) ..FAM EP0303615/PN
 4          0  ..FAM EP99303615/PN
 5          2  (1) ..FAM EP1052520/PN
 6          5  ..CITB EP1052520/PN
 7          4  ..CITF EP1052520/PN
```

Search statement   8

1 / 2 *PLUSPAT - ©QUESTEL-ORBIT - image*

PN - JP2000323767 A 20001124 [JP2000323767]

TI - (A) MAGNETO-ELECTRONIC DEVICE AND MAGNETIC HEAD

PA - (A) HITACHI LTD

PA0 - (A) HITACHI LTD

IN - (A) ALPHENAAR BRUCE W; TSUKAGOSHI KAZUHITO; MIZUTA HIROSHI

AP - JP2000062425 20000307 [2000JP-0062425]

PR - EP99303615 19990510 [1999EP-0303615]

IC - (A) G01R-033/02 G11B-005/39 H01F-010/06 H01F-010/16 H01L-043/08 H01L-043/10

EC - H01F-001/00E11

STG - (A) Doc. Laid open to publ. Inspec.

AB - PROBLEM TO BE SOLVED: To acquire a magneto-electronic device and a magnetic reproduction head hardly affected by an external noise and improved in S/N ratio.

SOLUTION: A magneto-electronic device comprises a first ferromagnetic region 3, a second ferromagnetic region 4, and a channel region 5 formed between the first ferromagnetic region 3. The second ferromagnetic region 4 responds to an applied magnetic field. The channel region 5 is structured to provide quasi-one dimensional channel so that a charge carrier passing through the first ferromagnetic region 3 can maintain its spin polarization when passing to the direction of the second ferromagnetic region 4.

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UP - 2001-03

2 / 2 *PLUSPAT - ©QUESTEL-ORBIT*

PN - EP1052520 A1 20001115 [EP1052520]

TI - (A1) Magnetoelectric device

OTI - (A1) Magnetoelektrischer Vorrichtung
(A1) Dispositif magnétoélectrique

LA - ENGLISH (ENG)

PA - (A1) HITACHI EUROP LTD (GB)

IN - (A1) ALPHENAAR BRUCE W (GB); TSUKAGOSHI KAZUHITO (GB); MIZUTA HIROSHI (GB)

AP - EP99303615 19990510 [1999EP-0303615]

PR - EP99303615 19990510 [1999EP-0303615]

IC - (A1) G01R-033/09 G11B-005/33 H01F-010/08

EC - G01R-033/09B
H01F-010/32N

DS - AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
AL LT LV MK RO SI

DT - Basic

CT - Cited in the search report
US5747859(A)(Cat. X);WO9825263(A)(Cat. Y);US5726837(A)(Cat. A)
TSEBRO V I ET AL: "TEMPERATURE DEPENDENCE OF ELECTRIC RESISTANCE AND MAGNETORESISTANCEOF PRESSED NANOCOMPOSITES OF MULTILAYER NANOTUBES WITH THE STRUCTURE OF NESTED CONES" JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, vol. 86, no. 6, 1 June 1998 (1998-06-01), pages 1216-1219, XP000776015 ISSN: 1063-7761(Cat. A)

STG - (A1) Public. Of applic. With search report

AB - A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a reading head for data stored in magnetic storage media, comprises first and second ferromagnetic regions (3, 4) with a channel region (5) between them, the ferromagnetic regions

being configured so that charge carriers with a particular spin polarisation which can pass through the first region, pass through the second region as a function of the relative orientations of magnetisation of the ferromagnetic regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The channel region (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first ferromagnetic region to maintain their spin polarisation as they pass towards the second ferromagnetic region. In an alternative embodiment a deposited carbon layer (14) is used in the channel region.

UP - 2000-44

Query/Command : prt set max

1 / 2 *PLUSPAT - ©QUESTEL-ORBIT - image*

PN - JP2000323767 A 20001124 [JP2000323767]

TI - (A) MAGNETO-ELECTRONIC DEVICE AND MAGNETIC HEAD

PA - (A) HITACHI LTD

PA0 - (A) HITACHI LTD

IN - (A) ALPHENAAR BRUCE W; TSUKAGOSHI KAZUHITO; MIZUTA HIROSHI

AP - JP2000062425 20000307 [2000JP-0062425]

PR - EP99303615 19990510 [1999EP-0303615]

IC - (A) G01R-033/02 G11B-005/39 H01F-010/06 H01F-010/16 H01L-043/08 H01L-043/10

EC - H01F-001/00E11

STG - (A) Doc. Laid open to publ. Inspec.

AB - PROBLEM TO BE SOLVED: To acquire a magneto-electronic device and a magnetic reproduction head hardly affected by an external noise and improved in S/N ratio.

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UP - 2001-03

2 / 2 *PLUSPAT - ©QUESTEL-ORBIT*

PN - EP1052520 A1 20001115 [EP1052520]

TI - (A1) Magnetoelectric device

OTI - (A1) Magnetoelektrischer Vorrichtung
(A1) Dispositif magnétoélectrique
LA - ENGLISH (ENG)
PA - (A1) HITACHI EUROP LTD (GB)
IN - (A1) ALPHENAAR BRUCE W (GB); TSUKAGOSHI KAZUHITO (GB); MIZUTA HIROSHI (GB)
AP - EP99303615 19990510 [1999EP-0303615]
PR - EP99303615 19990510 [1999EP-0303615]
IC - (A1) G01R-033/09 G11B-005/33 H01F-010/08
EC - G01R-033/09B
H01F-010/32N
DS - AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
AL LT LV MK RO SI
DT - Basic
CT - Cited in the search report
US5747859(A)(Cat. X);WO9825263(A)(Cat. Y);US5726837(A)(Cat. A)
TSEBRO V I ET AL: "TEMPERATURE DEPENDENCE OF ELECTRIC RESISTANCE AND MAGNETORESISTANCEOF PRESSED NANOCOMPOSITES OF MULTILAYER NANOTUBES WITH THE STRUCTURE OF NESTED CONES" JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, vol. 86, no. 6, 1 June 1998 (1998-06-01), pages 1216-1219, XP000776015 ISSN: 1063-7761(Cat. A)
STG - (A1) Public. Of applic. With search report
AB - A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a reading head for data stored in magnetic storage media, comprises first and second ferromagnetic regions (3, 4) with a channel region (5) between them, the ferromagnetic regions being configured so that charge carriers with a particular spin polarisation which can pass through the first region, pass through the second region as a function of the relative orientations of magnetisation of the ferromagnetic regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The channel region (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first ferromagnetic region to maintain their spin polarisation as they pass towards the second ferromagnetic region. In an alternative embodiment a deposited carbon layer (14) is used in the channel region.
UP - 2000-44

1 / 5 PLUSPAT - ©QUESTEL-ORBIT
PN - EP1052520 A1 20001115 [EP1052520]
TI - (A1) Magnetoelectric device
OTI - (A1) Magnetoelektrischer Vorrichtung
(A1) Dispositif magnétoélectrique
LA - ENGLISH (ENG)
PA - (A1) HITACHI EUROP LTD (GB)
IN - (A1) ALPHENAAR BRUCE W (GB); TSUKAGOSHI KAZUHITO (GB); MIZUTA HIROSHI (GB)
AP - EP99303615 19990510 [1999EP-0303615]
PR - EP99303615 19990510 [1999EP-0303615]
IC - (A1) G01R-033/09 G11B-005/33 H01F-010/08
EC - G01R-033/09B
H01F-010/32N
DS - AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
AL LT LV MK RO SI
DT - Basic
CT - Cited in the search report
US5747859(A)(Cat. X); WO9825263(A)(Cat. Y);US5726837(A)(Cat. A)
TSEBRO V I ET AL: "TEMPERATURE DEPENDENCE OF ELECTRIC RESISTANCE AND MAGNETORESISTANCEOF PRESSED NANOCOMPOSITES OF MULTILAYER

NANOTUBES WITH THE STRUCTURE OF NESTED CONES" JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, vol. 86, no. 6, 1 June 1998 (1998-06-01), pages 1216-1219, XP000776015 ISSN: 1063-7761(Cat. A)

STG - (A1) Public. Of applic. With search report

AB - A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a reading head for data stored in magnetic storage media, comprises first and second ferromagnetic regions (3, 4) with a channel region (5) between them, the ferromagnetic regions being configured so that charge carriers with a particular spin polarisation which can pass through the first region, pass through the second region as a function of the relative orientations of magnetisation of the ferromagnetic regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The channel region (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first ferromagnetic region to maintain their spin polarisation as they pass towards the second ferromagnetic region. In an alternative embodiment a deposited carbon layer (14) is used in the channel region.

UP - 2000-44

2 / 5 *PLUSPAT - ©QUESTEL-ORBIT - image*

PN - US5747859 A 19980505 [US5747859]

TI - (A) Magnetic device and magnetic sensor using the same

PA - (A) TOKYO SHIBAURA ELECTRIC CO (JP)

PA0 - Kabushiki Kaisha Toshiba, Kawasaki [JP]

IN - (A) KINNO TERUYUKI (JP); INOMATA KOICHIRO (JP); MIZUSHIMA KOICHI (JP); YAMAUCHI TAKASHI (JP)

AP - US69932696 19960819 [1996US-0699326]

PR - JP22562595 19950901 [1995JP-0225625]
JP18936696 19960718 [1996JP-0189366]

IC - (A) G11B-005/127 G11B-005/33 H01L-029/82 H01L-029/84

EC - G11B-005/39D
G11C-011/16
H01L-029/66S

PCL - ORIGINAL (O) : 257421000; CROSS-REFERENCE (X) : 257427000 360324200

DT - Basic

CT - US3972035; US4823177; US5416353; US5636093; US5640343
D.J. Monsma, et al., "Perpendicular Hot Electron Spin-Valve Effect in a New Magnetic Field Sensor: The Spin-Valve Transistor", Physical Review Letters, vol. 74, No. 26, Jun. 16, 1995, pp. 5260-5263.

STG - (A) United States patent

AB - A magnetic sensor has a three-terminal magnetic device consisting of an emitter, a base, and a collector. A semiconductor layer serving as the collector and a magnetic multilayered film serving as the base form a Schottky junction. The magnetic multilayered film has two magnetic films opposing each other with a nonmagnetic film between them. The emitter constructed of a metal film and the base are connected via a tunnel insulating film. The relationship between the magnetization directions in the magnetic films changes in accordance with an external magnetic field, and this changes the value of a current flowing through the magnetic device. The external magnetic field is sensed on the basis of this change in the current value.

3 / 5 *PLUSPAT - ©QUESTEL-ORBIT - image*

PN - US5726837 A 19980310 [US5726837]

TI - (A) Multilayer magnetoresistance effect-type magnetic head
PA - (A) HITACHI LTD (JP)
PA0 - Hitachi, Ltd., Tokyo [JP]
IN - (A) NAKATANI RYOICHI (JP); KITADA MASAHIRO (JP); KOYAMA NAOKI (JP); YUITO ISAMU (JP); TAKANO HISASHI (JP); MORIWAKI EIJIN (JP); SUZUKI MIKIO (JP); FUTAMOTO MASAAKI (JP); KUGIYA FUMIO (JP); MATSUDA YOSHIBUMI (JP); SHIIKI KAZUO (JP); MIYAMURA YOSHINORI (JP); AKAGI KYO (JP); NAKAO TAKESHI (JP); FUKUOKA HIROTSUGU (JP); MUNEMOTO TAKAYUKI (JP); TAKAGAKI TOKUHO (JP); KOBAYASHI TOSHIO (JP); TANABE HIDEO (JP); SHIMIZU NOBORU (JP)
AP - US32809094 19941024 [1994US-0328090]
FD - Cont. of US710775 19910605 [1991US-0710775]
Continuation of: US5390061 - 19950214
PR - US32809094 19941024 [1994US-0328090]
JP14864390 19900608 [1990JP-0148643]
JP21889490 19900822 [1990JP-0218894]
JP21890490 19900822 [1990JP-0218904]
JP24234190 19900914 [1990JP-0242341]
US71077591 19910605 [1991US-0710775]
IC - (A) G11B-005/33
EC - G01R-033/09B
G11B-005/39C
G11B-005/39C2
G11B-005/39C2C6
H01F-010/32N
H01F-010/32N4
H01F-010/32N6
H01L-043/08
PCL - ORIGINAL (O) : 360324200; CROSS-REFERENCE (X) : 257E43004
DT - Basic
CT - US2683856; US3813692; US4103315; US4825325; US4894741; US4896235; US4940511; US4949039; US5014147; US5132859; US5134533; US5159513; US5206590; US5390061; JP51-44917; JP53-17404; JP57-177573
Proceedings of the International Symposium on Physics of Magnetic Materials, Apr. 8-11, 1987, pp. 303-306.

Physical Review, vol. B39, p. 6995, "Conductive and Exchange Coupling of Two Ferromagnets Separated by a Tunneling Barrier".

Journal of Applied Physics, vol. 66, p. 4338, 1989, "Changes in Soft Magnetic Properties of Fe Multilayered Films due to Lattice Mismatches between Fe and Intermediate Layers", Nakatani et al.

Physical Review Letters, vol. 61, No. 21, pp. 2472-2475 (1988).

Pratt et al, "Giant Magnetoresistance with Current Perpendicular to the Layer Planes of Ag/Co and AgSn/Co Multilayers (invited)", J. Appl. Phys., vol. 73, No. 10, May 15, 1993, pp. 5326-5331.
STG - (A) United States patent

AB - The magnetoresistance effect element is of a multilayered structure having at least magnetic layers and an intermediate layer of an insulating material, a semiconductor or an antiferromagnetic material against the magnetic layers, and the magnetoresistance effect element has terminals formed at least on the opposite magnetic layers, respectively, so that a current flows in the intermediate layer. The film surfaces of all the magnetic layers constituting the magnetoresistance effect element are opposed substantially at right angles to the recording surface of a magnetic recording medium. Therefore, the area of the magnetic layers facing the recording surface of the magnetic recording medium can be extremely reduced, and thus the magnetic field from a very narrow region of the high-density recorded

magnetic recording medium can be detected by the current which has a tunneling characteristic and passes through the intermediate layer.

4 / 5 *PLUSPAT - ©QUESTEL-ORBIT*
PN - XP000776015 A 19980600 [XP-776015]
AP - XP000776015 19980600 [1998XP-0776015]
EC - B82B-003/00
STG - (A) Selected Articles in EPO

5 / 5 *PLUSPAT - ©QUESTEL-ORBIT - image*
PN - WO9825263 A1 19980611 [WO9825263]
TI - (A1) LATERAL MAGNETO-ELECTRONIC DEVICE EXPLOITING A QUASI-TWO-DIMENSIONAL ELECTRON GAS
OTI - (A1) DISPOSIFIF MAGNETO-ELECTRONIQUE LATERAL EXPLOITANT UN GAZ D'ELECTRONS QUASI BIDIMENSIONNEL
LA - ENGLISH (ENG)
PA - (A1) PHILIPS ELECTRONICS NV (NL); PHILIPS NORDEN AB (SE)
PA0 - PHILIPS ELECTRONICS N.V. ; Groenewoudseweg 1 NL-5621 BA Eindhoven (NL)
PHILIPS NORDEN AB ; Kottbygatan 7 Kista S-164 85 Stockholm (SE) (only SE)
IN - (A1) LENSSEN KARS-MICHIEL HUBERT
AP - WOIB9701399 19971106 [1997WO-IB01399]
PR - EP96203404 19961202 [1996EP-0203404]
IC - (A1) G01R-033/06 G11B-005/127 G11C-011/15 H01L-043/00
EC - G01R-033/09B
G11B-005/00
G11B-005/127
G11B-005/245
G11B-005/31
G11B-005/39C
G11B-005/49S2C2
G11C-011/14
G11C-011/15
H01F-010/32N4
H01L-029/82
H01L-043/08
DS - JP; European Patent (AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE)
DT - Basic
CT - Cited in the search report
US5654566(A)(Cat. X,P);US5565695(A)(Cat. Y);US5432373(A)(Cat. Y);EP450912(A)(Cat. A)
APPL. PHYS. LETT., Volume 56, No. 7, February 1990, SUPRIYO DATTA, BISWAJIT DAS, "Electronic Analog of the Electro-Optic Modulator", pages 665-667.(Cat. A)
STG - (A1) Publ. Of int. Appl. With int. Search rep
AB - A magneto-electronic device comprising a substrate (1) on which a first body (21) and a second body (22) of magnetic material are provided, whereby the magnetization (M2) of at least the second body (22) is not fixed, the two bodies (21, 22) being substantially coplanar and mutually isolated, and being mutually connected via a layer (3) of semi-conductor material in which a quasi-two-dimensional electron gas can be generated.

Query/Command : citf ep1052520/pn

** SS 7: Results 4

Search statement 8

Query/Command : prt set max

1 / 4 *PLUSPAT - ©QUESTEL-ORBIT - image*

PN - EP1308741 A1 20030507 [EP1308741]
TI - (A1) Magnestoresistive sensor and manufacturing method therefor
OTI - (A1) Magnetoresistiver Sensor und sein Herstellungsverfahren
(A1) Capteur magnétoresistif et son procédé de fabrication
LA - ENGLISH (ENG)
PA - (A1) FUJITSU LTD (JP)
PA0 - FUJITSU LIMITED / 1-1, Kamikodanaka 4-chome, Nakahara-ku / Kawasaki-shi, Kanagawa 211-8588 (JP)
IN - (A1) SUGAWARA TAKAHIKO (JP)
AP - EP02251657 20020308 [2002EP-0251657]
PR - JP2001339416 20011105 [2001JP-0339416]
IC - (A1) G01R-033/09
EC - G01R-033/09
DS - AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR AL LT LV MK RO SI
DT - Basic
CT - Cited in the search report
JP2001143227(A)(Cat. X); EP1052520(A)(Cat. A)
OKUYAMA F ET AL: "FORMATON OF CARBON NANOTUBES AND THEIR FILLING WITH METALLIC FIBERSON ION-EMITTING FIELD ANODES" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 84, no. 3, 1 August 1998 (1998-08-01), pages 1626-1631, XP000955283 ISSN: 0021-8979(Cat. Y,D)
OHNUMA M ET AL: "Microstructure of Co-Al-O granular thin films" JOURNAL OF APPLIED PHYSICS, vol. 82, no. 11, 1 December 1997 (1997-12-01), pages 5646-5652, XP002227891 New York(Cat. A)
STG - (A1) Public. Of applic. With search report
AB - A magnetoresistive sensor (14) including a lower electrode layer (16), a nanotube structure film (18) composed of an insulator matrix (20) and a plurality of nanotubes (22) dispersively arranged in the insulator matrix (20), a magnetoresistive film (28) provided on the nanotube structure film (18), and an upper electrode layer (30) provided on the magnetoresistive film (28). Each nanotube (22) is composed of a circular tubular nonmetal (24) and a circular cylindrical metal (26) surrounded by the circular tubular nonmetal (24). The nanotube structure film (18) is partially etched at its central region to make conduction of the upper electrode layer (30) and the lower electrode layer (16) through the magnetoresistive film (28) and the circular cylindrical metal (26) of each nanotube (22) present at the central region.
UP - 2003-19

2 / 4 *PLUSPAT - ©QUESTEL-ORBIT - image*
PN - US2003021141 A1 20030130 [US20030021141]
PN2 - US6574130 B2 20030603 [US6574130]
TI - (A1) Hybrid circuit having nanotube electromechanical memory
PA - (B2) NANTERO INC (US)
PA0 - Nantero, Inc., Woburn MA [US]
PA2 - (B2) NANTERO INC (US)
IN - (A1) SEGAL BRENT M (US); BROCK DARREN K (US); RUECKES THOMAS (US)
AP - US91509501 20010725 [2001US-0915095]
PR - US91509501 20010725 [2001US-0915095]
IC - (A1) G11C-011/00
PCL - ORIGINAL (O) : 365129000; CROSS-REFERENCE (X) : 365151000
DT - Basic
TG - (A1) Utility Patent Application published on or after January 2, 2001
STG2 - (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001
AB - A hybrid memory system having electromechanical memory cells is disclosed. A memory cell core circuit has an array of electromechanical memory cells, in which each cell is a crossbar junction at least one element of which is a nanotube or a nanotube ribbon. An access circuit provides array addresses to the memory cell core circuit to select at least one corresponding cell. The access circuit is constructed of semiconductor circuit elements.
UP - 2003-07

3 / 4 *PLUSPAT - ©QUESTEL-ORBIT - image*
PN - WO03007304 A2 20030123 [WO200307304]
PN2 - WO03007304 A3 20030501 [WO200307304]
TI - (A2) MAGNETIC MEMORY UNIT AND MAGNETIC MEMORY ARRAY
OTI - (A2) MAGNETISCHE SPEICHEREINHEIT UND MAGNETISCHES SPEICHERARRAY
(A2) UNITE MEMOIRE MAGNETIQUE ET MATRICE MEMOIRE MAGNETIQUE
LA - GERMAN (GER)
PA - (A2) HOENLEIN WOLFGANG (DE); INFINEON TECHNOLGIES AG (DE); KREUPL FRANZ (DE)
PA0 - INFINEON TECHNOLGIES AG; St.-Martin-Strasse 53, 81669 München (DE) (except US)
HÖNLEIN, Wolfgang; Parkstr. 8 A, 82008 Unterhaching (DE) (only US)
KREUPL, Franz; Mandlstrasse 24, 80802 München (DE) (only US)
PA2 - (A3) HOENLEIN WOLFGANG (DE); INFINEON TECHNOLGIES AG (DE); KREUPL FRANZ (DE)
IN - (A2) HOENLEIN WOLFGANG (DE); KREUPL FRANZ (DE)
AP - WODE0202458 20020704 [2002WO-DE02458]
PR - DE10133373 20010710 [2001DE-1033373]
IC - (A2) G11C-011/16
EC - G11C-011/14
G11C-011/16
DS - JP; KR; US; European patent (AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; SK; TR)
DT - Basic
CT - Cited in the search report
EP1052520(A)(Cat. X)
STG - (A2) Publ. Of int. Appl. W/out int. Search rep
STG2 - (A3) Subsqu. Publ. Of int. Search report
AB - The invention relates to a magnetic memory unit and a magnetic memory array. Said magnetic memory unit has a first magnetizable electrode, a second magnetizable electrode and at least one nanotube, which is positioned in a longitudinal direction between the electrodes and is coupled at its first longitudinal end to the first electrode and at its second longitudinal end to the second electrode. The magnetic memory array has numerous magnetic memory units.
UP - 2003-05

PN - EP1052520 A1 20001115 [EP1052520]

TI - (A1) Magnetoelectric device

OTI - (A1) Magnetoelektrischer Vorrichtung
(A1) Dispositif magnétoélectrique

LA - ENGLISH (ENG)

PA - (A1) HITACHI EUROP LTD (GB)

IN - (A1) ALPHENAAR BRUCE W (GB); TSUKAGOSHI KAZUHITO (GB); MIZUTA HIROSHI (GB)

AP - EP99303615 19990510 [1999EP-0303615]

PR - EP99303615 19990510 [1999EP-0303615]

IC - (A1) G01R-033/09 G11B-005/33 H01F-010/08

EC - G01R-033/09B
H01F-010/32N

DS - AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
AL LT LV MK RO SI

DT - Basic

CT - Cited in the search report
US5747859(A)(Cat. X); WO9825263(A)(Cat. Y);US5726837(A)(Cat. A)
TSEBRO V I ET AL: "TEMPERATURE DEPENDENCE OF ELECTRIC RESISTANCE AND MAGNETORESISTANCEOF PRESSED NANOCOMPOSITES OF MULTILAYER NANOTUBES WITH THE STRUCTURE OF NESTED CONES" JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, vol. 86, no. 6, 1 June 1998 (1998-06-01), pages 1216-1219, XP000776015 ISSN: 1063-7761(Cat. A)

STG - (A1) Public. Of applic. With search report

AB - A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a reading head for data stored in magnetic storage media, comprises first and second ferromagnetic regions (3, 4) with a channel region (5) between them, the ferromagnetic regions being configured so that charge carriers with a particular spin polarisation which can pass through the first region, pass through the second region as a function of the relative orientations of magnetisation of the ferromagnetic regions produced by the applied magnetic field such that the device exhibits a conductivity as a function of the strength of the applied field. The channel region (5) includes a nanotube (6) which may be formed of carbon, configured to provide a quasi-one-dimensional channel to cause charge carriers which pass through the first ferromagnetic region to maintain their spin polarisation as they pass towards the second ferromagnetic region. In an alternative embodiment a deposited carbon layer (14) is used in the channel region.

UP - 2000-44

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Set     Items   Description
S1     3444602   FERROMAGNET? OR FERRO()MAGNET? OR IRON OR FE OR COBALT OR -
              CO
S2       26659   CHANNEL?(3N)REGION?
S3      117636   NANOTUBE? OR NANO()TUBE? OR NANOWIRE? OR NANO()WIRE? OR QU-
              ANTUM()WIRE? OR QUANTUMWIRE ? OR NANO()CYLINDER ? OR FULLEREN-
              E? OR SUBMICRON()WIRE? OR SWNT
S4      262230   MR OR MAGNETO()RESIST? OR MAGNETORESIST? OR MAGNETO()ELECT-
              RIC? OR MAGNETOELECTRIC? OR SPIN()VALVE? OR SPINVALVE? OR MAN-
              ETIC()TUNNEL?()JUNCTION? OR MRAM OR GMR OR MTJ OR MAGNETIC()R-
              AM OR GIANT()(MR OR MAGNETORESIST?)
S5           1   S1 AND S2 AND S3 AND S4
S6          10   S2(10N)S3
S7           1   S6 AND (S1 OR S4)
S8           9   S6 NOT S7
S9        4131   S1(10N)S3
S10       3240   S1(6N)S3
S11        635   S1 AND S3 AND S4
S12        281   S1 (10N) S3 (10N) S4
S13        229   S1 (6N) S3 (6N) S4
S14        174   S1 (3N) S3 (3N) S4
S15         64   S14 AND PY<=1999
S16         32   RD (unique items)
S17         32   S16 NOT S5
? show files
File 315:ChemEng & Biotec Abs 1970-2003/Jul
         (c) 2003 DECHEMA
File   2:INSPEC 1969-2003/Aug W1
         (c) 2003 Institution of Electrical Engineers
File   6:NTIS 1964-2003/Aug W2
         (c) 2003 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2003/Aug W1
         (c) 2003 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2003/Aug W1
         (c) 2003 Inst for Sci Info
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File  65:Inside Conferences 1993-2003/Aug W2
         (c) 2003 BLDSC all rts. reserv.
File  35:Dissertation Abs Online 1861-2003/Jul
         (c) 2003 ProQuest Info&Learning
File 144:Pascal 1973-2003/Aug W1
         (c) 2003 INIST/CNRS
File  99:Wilson Appl. Sci & Tech Abs 1983-2003/Jul
         (c) 2003 The HW Wilson Co.
File  94:JICST-EPlus 1985-2003/Aug W1
         (c)2003 Japan Science and Tech Corp(JST)
File 347:JAPIO Oct 1976-2003/Apr(Updated 030804)
         (c) 2003 JPO & JAPIO
File 350:Derwent WPIX 1963-2003/UD,UM &UP=200352
         (c) 2003  Thomson Derwent
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17/9/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
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6274569 INSPEC Abstract Number: A1999-14-7360D-001
Title: Magnetoresistance **of** ferromagnetic nanowires
Author(s): Wegrowe, J.-E.; Kelly, D.; Franck, A.; Gilbert, S.E.; Ansermet, J.-P.
Author Affiliation: Inst. de Phys. Exp., Ecole Polytech. Federale de Lausanne, Switzerland
Journal: Physical Review Letters vol.82, no.18 p.3681-4
Publisher: APS,
Publication Date: 3 May 1999 Country of Publication: USA
CODEN: PRLTAO ISSN: 0031-9007
SICI: 0031-9007(19990503)82:18L.3681:MFN;1-#
Material Identity Number: P096-1999-020
U.S. Copyright Clearance Center Code: 0031-9007/99/82(18)/3681(4)$15.00
Document Number: S0031-9007(99)09021-3
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: **Magnetoresistance** of single Ni and **Co** **nanowires** , of about 60 nm in diameter and 6000 nm in length, was measured at room temperature. The full magnetoresistive hysteresis loops of single Ni nanowires, including the irreversible jump, are understood qualitatively, and major progress has been made towards their quantitative description, on the basis of anisotropic magnetoresistance. In contrast, the **magnetoresistive** hysteresis loops of single **Co** **nanowires** could not be described quantitatively, due to the presence of nucleation processes of domain walls or vortices. (26 Refs)
Subfile: A
Descriptors: cobalt; ferromagnetic materials; interface magnetism; magnetic hysteresis; magnetoresistance; nanostructured materials; nickel; quantum wires
Identifiers: magnetoresistance; ferromagnetic nanowires; single Ni nanowires; single Co nanowires; room temperature; full magnetoresistive hysteresis loops; irreversible jump; anisotropic magnetoresistance; magnetoresistive hysteresis loops; nucleation processes; domain walls; vortices; 60 nm; 6000 nm; 20 C; Ni; Co
Class Codes: A7360D (Electrical properties of metals and metallic alloys (thin films/low-dimensional structures)); A7550C (Ferromagnetism of nonferrous metals and alloys); A7215G (Galvanomagnetic and other magnetotransport effects (metals/alloys)); A7550R (Magnetism in interface structures); A7570C (Interfacial magnetic properties); A7560E (Magnetization curves, hysteresis, Barkhausen and related effects)
Chemical Indexing:
Ni int - Ni el (Elements - 1)
Co int - Co el (Elements - 1)
Numerical Indexing: size 6.0E-08 m; size 6.0E-06 m; temperature 2.93E+02 K
Copyright 1999, IEE

17/9/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC
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5675278 INSPEC Abstract Number: A9719-7360D-007, B9710-3110M-034
Title: **Perpendicular** giant magnetoresistance **in** Co **/Cu** **and** **permalloy/Cu multilayered** nanowires
Author(s): Dubois, S.; Duvail, J.L.; Fert, A.; George, J.M.; Maurice, J.L.; Piraux, L.

Author Affiliation: UPCPM, Louvain-la-Neuve, Belgium
Journal: Journal of Applied Physics Conference Title: J. Appl. Phys. (USA) vol.81, no.8 p.4569
Publisher: AIP,
Publication Date: 15 April 1997 Country of Publication: USA
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(19970415)81:8L.4569:PGMP;1-0
Material Identity Number: J004-97015
U.S. Copyright Clearance Center Code: 0021-8979/97/81(8)/4569/1/$10.00
Conference Title: 41st Annual Conference on Magnetism and Magnetic Materials
Conference Sponsor: AIP; IEEE; TMS; Office of Naval Res.; ASTM; APS; American Ceramic Soc
Conference Date: 12-15 Nov. 1996 Conference Location: Atlanto, GA, USA
Document Number: S0021-8979(97)79508-2
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: We have prepared Co/Cu and NiFe/Cu (Ni/Fe=permalloy) multilayered nanowires by electrodeposition into pores of membranes or holes made by e-beam lithography in PMMA layers. In both cases, pores and lithography, the diameter of the wires is around 100 nm and the layer thickness ranges between a few nm and several hundred nm. Transmission electron microscopy reveals that the nanowires are composed of long single-crystal grains with c axis (hcp Co) or (111) axis (fcc NiFe or Cu) perpendicular to the axis of the wire. A first series of samples is composed of conventional periodic multilayers. Their CPP-MR ratio can be as large as 80% at 4.2 K (NiFe 5 nm/Cu 5 nm) and giant magnetoresistance effects can be observed up to very large thicknesses (example: t/sub co/=1 mu m). At small thicknesses, we find the conventional behavior of the so-called "long spin diffusion length limit." More interesting are the results obtained out of this limit and used to determine the spin diffusion length SDL in Cu (140 nm at low T) and Co (44 nm at low T). For NiFe/Cu, the magnetic arrangement of successive layers is more difficult to control and we could not determine the SDL from data of the first series. A second series of samples is made with NiFe/Cu/NiFe trilayers (t/sub Cu/=10 nm, 7 nm<or=t/sub NiFe/<or=30 nm), separated from each other by Cu layers of 100 nm. As shown by superconducting quantum interference device measurements, the magnetization of the two NiFe layers in a trilayer are approximately antiparallel at zero field. We use the CPP-MR data on these samples to derive the SDL in permalloy. (0 Refs)
Subfile: A B
Descriptors: cobalt; copper; electrodeposits; ferromagnetic materials; giant magnetoresistance; magnetic multilayers; nanostructured materials; Permalloy; transmission electron microscopy
Identifiers: perpendicular giant magnetoresistance; permalloy/Cu multilayered nanowires; Co/Cu multilayered nanowires; electrodeposition; e-beam lithography; PMMA layers; transmission electron microscopy; long single-crystal grains; spin diffusion length; NiFe/Cu/NiFe trilayers; magnetization; 4.2 K; 5 nm; 1 mum; 140 nm; 44 nm; 10 nm; 7 to 30 nm; 100 nm ; Co-Cu; NiFe-Cu
Class Codes: A7360D (Electronic properties of metallic thin films); A7550R (Magnetism in interface structures); A7570F (Magnetic ordering in multilayers); A7550B (Ferromagnetism of Fe and its alloys); A7550C (Ferromagnetism of other metals); A6480G (Microstructure); A6855 (Thin film growth, structure, and epitaxy); A8115L (Deposition from liquid phases (melts and solutions)); B3110M (Magnetic multilayers); B3110C (Ferromagnetic materials)
Chemical Indexing:
Co-Cu int - Co int - Cu int - Co el - Cu el (Elements - 1,1,2)
NiFe-Cu int - NiFe int - Cu int - Fe int - Ni int - NiFe bin - Fe bin -

Ni bin - Cu el (Elements - 2,1,3)
Numerical Indexing: temperature 4.2E+00 K; size 5.0E-09 m; size 1.0E-06 m ; size 1.4E-07 m; size 4.4E-08 m; size 1.0E-08 m; size 7.0E-09 to 3.0E-08 m ; size 1.0E-07 m
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17/9/9 (Item 9 from file: 2)
DIALOG(R)File 2:INSPEC
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5487584 INSPEC Abstract Number: A9705-7215G-002
Title: Perpendicular giant magnetoresistance in magnetic multilayered nanowires
Author(s): Piraux, L.; Dubois, S.; Fert, A.
Author Affiliation: Univ. Catholique de Louvain, Belgium
Journal: Journal of Magnetism and Magnetic Materials vol.159, no.3 p.L287-92
Publisher: Elsevier,
Publication Date: July 1996 Country of Publication: Netherlands
CODEN: JMMMDC ISSN: 0304-8853
SICI: 0304-8853(199607)159:3L.1287:PGMM;1-C
Material Identity Number: J271-97001
U.S. Copyright Clearance Center Code: 0304-8853/96/$15.00
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: We present **giant magnetoresistance** (**GMR**) measurements performed on electrodeposited **Co** /Cu multilayered **nanowires** . The variation of the **GMR** with the thicknesses of the Cu and Co layers over wide ranges is discussed in the framework of the Valet-Fert model for perpendicular GMR. The interface and bulk spin-dependent scattering parameters as well as the spin diffusion lengths in the nonmagnetic and ferromagnetic layers are extracted from this analysis. (21 Refs)
Subfile: A
Descriptors: cobalt; copper; electrodeposition; ferromagnetic materials; giant magnetoresistance; magnetic multilayers; magnetic thin films; metallic thin films; nanostructured materials
Identifiers: giant magnetoresistance; magnetic multilayered nanowires; electrodeposited layers; layer thickness; Valet Fert model; bulk spin dependent scattering parameters; spin diffusion lengths; 4 nm; 10 nm; 77 K; 295 K; 4 to 160 nm; Co-Cu
Class Codes: A7215G (Galvanomagnetic and other magnetotransport effects (metals/alloys)); A8115L (Deposition from liquid phases (melts and solutions)); A6865 (Layer structures, intercalation compounds and superlattices: growth, structure and nonelectronic properties); A7570F (Magnetic ordering in multilayers); A7550C (Ferromagnetism of other metals); A7550R (Magnetism in interface structures); A7570C (Interfacial magnetic properties of films and multilayers); A6480G (Microstructure)
Chemical Indexing:
Co-Cu int - Co int - Cu int - Co el - Cu el (Elements - 1,1,2)
Numerical Indexing: size 4.0E-09 m; size 1.0E-08 m; temperature 7.7E+01 K ; temperature 2.95E+02 K; size 4.0E-09 to 1.6E-07 m
Copyright 1997, FIZ Karlsruhe

17/9/18 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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08049941 Genuine Article#: 241DP Number of References: 65
Title: Magnetic nanowires

intrinsic differences between the magnetization reversal mechanisms taking place in these two systems. For Ni, the crystal anisotropy is small compared to the shape anisotropy and the magnetization lies along the wire axis. In contrast, the strong crystal anisotropy of Co and the orientation of the crystal easy axis (nearly perpendicular to the wire axis), allows for the appearance of a multidomain magnetization configuration, each domain being oriented partially along the normal to the wire axis. Experimental evidence for the existence of this multidomain configuration has been obtained from resistivity and magnetization measurements. Large scale micromagnetic calculations for Co and Ni wires with high aspect ratios corroborate the strong influence of the crystal anisotropy on the overall properties of Co wires and provide an accurate microscopic description of the nucleation fields and the magnetization reversal mechanism for Ni wires.

Identifiers--KeyWord Plus(R): **GIANT MAGNETORESISTANCE** ; MULTILAYERED **NANOWIRES** ; ALUMITE FILMS; PARTICLES; **CO;** CYLINDERS; REVERSAL

Research Fronts: 95-3479 001 (BA-FERRITE LONGITUDINAL THIN-FILM MEDIA; MICROMAGNETIC MODELING; MAGNETIZATION REVERSAL)

95-3480 001 (MAGNETIC FLUID; FERROMAGNETIC FINE PARTICLES IN CU97CO3 ALLOY; MAGNETIZATION REVERSAL; SUPERPARAMAGNETIC RELAXATION; INTERACTING SINGLE-DOMAIN GRAINS)

95-6939 001 (DOMAIN-WALL DYNAMICS; MAGNETIC GARNET-FILMS; 2-DIMENSIONAL DIPOLAR SYSTEMS)

95-7484 001 (COERCIVITY IN ND-FE-B SINTERED MAGNETS; MAGNETIZATION REVERSAL; FERROMAGNETIC FINE PARTICLES; PARTICULATE RECORDING MEDIA; CU97CO3 ALLOY; SMALL ADDITIONS)

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PEASE RFW, 1995, V13, P1089, J VAC SCI TECHNOL B
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PIRAUX L, 1996, V159, PL287, J MAGN MAGN MATER
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WERNSDORFER W, 1996, V77, P1873, PHYS REV LETT
WHITNEY TM, 1993, V261, P1316, SCIENCE
YANG YD, 1988, V24, P2368, IEEE T MAGN
YANG YD, 1989, V66, P320, J APPL PHYS

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8/9/8 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014335046 **Image available**
WPI Acc No: 2002-155749/200221
Related WPI Acc No: 2002-091203
XRAM Acc No: C02-048832
XRPX Acc No: N02-118383

Field effect transistor used as a MOSFET comprises a nanowire, and nanotubes applied to the wire and having an electrically insulating region and a semiconducting region or a metallic region

Patent Assignee: INFINEON TECHNOLOGIES AG (INFN)
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Number of Countries: 022 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 10032414	C1	20011122	DE 1032414	A	20000704	200221	B
WO 200203482	A1	20020110	WO 2001DE2451	A	20010703	200221	
EP 1299914	A1	20030409	EP 2001953838	A	20010703	200325	
			WO 2001DE2451	A	20010703		

Priority Applications (No Type Date): DE 1032414 A 20000704; DE 1032370 A 20000704
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 10032414	C1		7	H01L-029/775	
WO 200203482	A1	G		H01L-051/20	

Designated States (National): JP US
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1299914	A1	G		H01L-051/20	Based on patent WO 200203482

Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

Abstract (Basic): DE 10032414 C1

NOVELTY - Field effect transistor comprises a **nanowire** forming a source **region** (102), a **channel region** (103) and a drain region (104); and **nanotubes** (101) applied to the wire and having an electrically insulating region and a semiconducting region or a metallic region. The insulating region of the tubes is applied to the channel region of the wire so that the insulating region of the tubes forms an insulator of the transistor. The semiconducting region or metallic region forms a gate region of the transistor.

DETAILED DESCRIPTION - Preferred Features: The nanowire is made from silicon, or carbon. The semiconducting region is arranged between two metallic conducting regions.

USE - Used as a MOSFET.

ADVANTAGE - The transistor is compact.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross-section through the transistor.

nanotubes (101)
source region (102)
channel region (103)
drain region (104)
pp; 7 DwgNo 1A/4

Title Terms: FIELD; EFFECT; TRANSISTOR; MOSFET; COMPRISE; APPLY; WIRE; ELECTRIC; INSULATE; REGION; SEMICONDUCTOR; REGION; METALLIC; REGION
Derwent Class: L03; Q68; U12
International Patent Class (Main): H01L-029/775; H01L-051/20
International Patent Class (Additional): B82B-001/00; H01L-021/335;

H01L-029/15; H01L-029/423
File Segment: CPI; EPI; EngPI
Manual Codes (CPI/A-N): L04-C11C; L04-E01B1
Manual Codes (EPI/S-X): U12-B03F1; U12-D02D

8/9/9 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014270505 **Image available**
WPI Acc No: 2002-091203/200213
Related WPI Acc No: 2002-155749
XRPX Acc No: N02-067130
Carbon nanotube field effect transistor has two nanotubes spaced apart to prevent tunnel current between them
Patent Assignee: INFINEON TECHNOLOGIES AG (INFN)
Inventor: HANEDER T P; HOENLEIN W; KREUPL F
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 10032370	C1	20011213	DE 1032370	A	20000704	200213	B

Priority Applications (No Type Date): DE 1032370 A 20000704
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 10032370	C1		7	H01L-029/775	

Abstract (Basic): DE 10032370 C1
NOVELTY - The field effect transistor (100) has a first carbon **nanotube** (101), providing a source **region**, a **channel region** and a drain region and a second carbon **nanotube** (106), providing a gate region and supplied with a control voltage, for controlling the conductivity of the **channel region**. The **nanotubes** are spaced apart by a sufficient distance to prevent any tunnel current between them, e.g. the second **nanotube** is applied to an insulation layer (105) around the **channel region** provided by the first **nanotube**.
USE - None given.
ADVANTAGE - The nanotube field effect transistor has a high reliability and a reduced surface area requirement.
DESCRIPTION OF DRAWING(S) - The figure shows a cross-section through a carbon nanotube field effect transistor.
Field effect transistor (100)
First carbon nanotube (101)
Insulation layer (105)
Second carbon nanotube (106)
pp; 7 DwgNo 1/6
Title Terms: CARBON; FIELD; EFFECT; TRANSISTOR; TWO; SPACE; APART; PREVENT; TUNNEL; CURRENT
Derwent Class: Q68; U12
International Patent Class (Main): H01L-029/775
International Patent Class (Additional): B82B-001/00; H01L-029/15
File Segment: EPI; EngPI
Manual Codes (EPI/S-X): U12-D02D1
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SEARCH REQUEST FORM Scientific and Technical Information Center - EIC2800

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Date 8/13/03 Serial # 09/504,623 Priority Application Date May 10, 1999

Your Name Jennifer Dolan Examiner # 79006

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What types of references would you like? Please checkmark:

Primary Refs X Nonpatent Literature X Other relevant papers published in the scientific journals

Secondary Refs X Foreign Patents ___

Teaching Refs ___

What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

Topic: The use of nanotubes between two ferromagnetic layers to form a magnetoresistive sensor or any magnetoresistive structure.

In particular, the subject matter of independent claim 13

(Structure diagram is provided on next page)

*ferromagnetic: any alloys including iron or cobalt

*nanotube synonyms: nanowire; quantum wire; nano cylinder; fullerene; submicron wire; SWNT

*MR sensor = magnetoresistive, magnetoresistance, magnetoelectric, spin valve, ~~[illegible]~~ magnetic tunnel junction, MRAM, GMR, MTJ

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Searcher:	Bode ? [illegible]	Structure (#)		STN	
Searcher Phone:	605 1726	Bibliographic	✓	Dialog	✓
Searcher Location:	STIC-EIC2800, CP4-9C18	Litigation		Questel/Orbit	✓
Date Searcher Picked Up:	08-14-03	Fulltext		Lexis-Nexis	
Date Completed:	08-14-03	Patent Family	✓	WWW/Internet	
Searcher Prep/Rev Time:	40	Other		Other	
Online Time:	200				

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